

15. (a) What is Huckel's rule? Explain with suitable examples.

Or

- (b) Why cyclooctatetraene adopts a tub-shaped structure rather than being planar, and affects its aromaticity? Explain.

SECTION C — ( $3 \times 10 = 30$  marks)

Answer any THREE questions.

16. Write down the overall reaction for the formation of benzoin from benzaldehyde and explain the mechanism of the benzoin condensation reaction using cyanide ion as a catalyst.
17. Explain the mechanism of the Cope elimination and pyrolytic elimination with an examples.
18. Explain the selectivity of reduction of 4-*t*-butylcyclohexanone using selecterides.
19. Describe the Ullmann coupling reaction. Explain the role of copper salts and free radicals in this reaction.
20. Analyze the aromaticity of systems containing more than 10  $\pi$  electrons. Discuss the stability and reactivity of these systems, providing examples to illustrate your points.

NOVEMBER/DECEMBER 2024

GCH21/DCH21 — ORGANIC CHEMISTRY- II

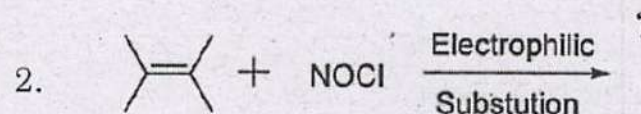
Time : Three hours

Maximum : 75 marks

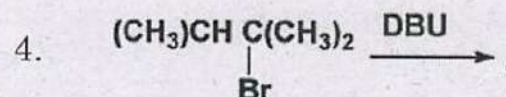
SECTION A — ( $10 \times 2 = 20$  marks)

Answer ALL questions.

1. Write the mechanism of the electrophilic addition of bromine to ethene.



3. Write the Hofmann and Saytzeff rules.

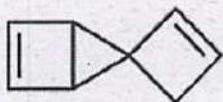


5. Define allylic oxidation.
6. What is the role of DMSO in combination with DCC and acetic anhydride in the oxidation of alcohols?
7. What is the Pschorr reaction?

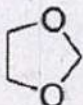


8. Write IUPAC name of the following

(a)



(b)



9. Draw the structure of [12] Annulene and [14] Annulene and explain whether it is aromatic or antiaromatic.

10. Define aromaticity.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

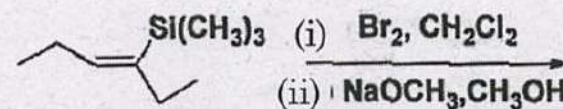
11. (a) (i) Describe the hydroboration-oxidation of alkenes. (3)  
(ii) What product is formed when 1-hexene undergoes hydroboration-oxidation? (2)

Or

- (b) What is the Simon-Smith reaction? Explain their mechanism.
12. (a) Explain the E1, E2, and E1cB spectrum with energy profiles and reaction intermediates.

Or

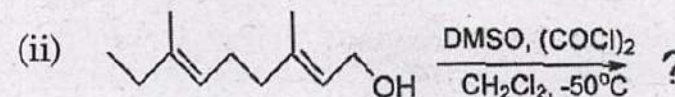
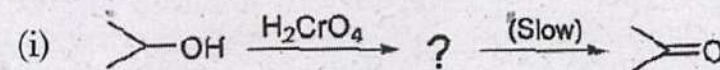
- (b) Find the product and suggest the mechanism of the following reactions:



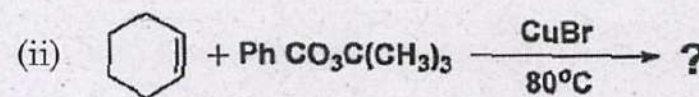
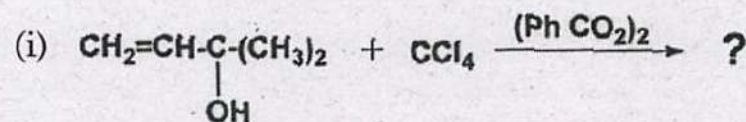
13. (a) Explain the reduction of imline using sodium cyanoborohydride.

Or

- (b) Explain the following reactions



14. (a) Predict the structure of the products of the following reactions.



Or

- (b) Discuss the Hunsdiecker reaction.